

Inside the Cisco Web Site



Sue Aragon-Stemel, the manager of Cisco's network commerce IS department, spent the morning with Internet Computing's Acquisition's Editor Meredith Wiggins describing the history behind Cisco's famous \$10 million a day Web site, the technology they are using, and their strategies for the future.

Tell us the history of how Cisco migrated to its current electronic commerce model, what you call the "networked enterprise."

I'd like to say we had a plan of grand proportions, but what really happened is the plan evolved as we built each new application. Customer Service was the initial driving force; they were performing so many inquiries online — "What's my order status?" "What's the price of this?" "Help me configure this product?" — we realized that we were growing so fast, and ramping up so quickly on customer service representatives, that it wasn't reasonable to keep going at that pace.

What happened next?

We decided to try to automate some functions. Customer service said, "What is our biggest item?" "What are the things we do the most?" "What would be the biggest bang for the buck?" And what it came down to was order status inquiry. So that became our very first commerce agent, and we launched it back in September of 1995. There weren't too many people launching this type of application on the Web at that time.

By the way, in terms of time frames it's important to remember I'm talking about our commerce applications only here. Cisco's history has been very much Internet-based, and then Web-based when the Web became available. We had been doing technical support online since Cisco's inception, first on the Arpanet and then on the Internet and then on the Web.

Tell me a little about that.

we immediately started providing customer support on the Net, so that if you had an issue you went to the Net to tell us about it. Customer inquiries are still our most popular tools. We have over 100,000 inquiries a month on our order status tool, which are 100,000 phone calls that don't come into our customer service center.

So the order status tool was a success. What then?

From there it really was just saying, "What are the next things that are hitting us?" The customer service IS organization at this time took a tag team of people and said, "Start looking at the Web: What can we do to automate better? What can we do to give customers the information they need when they need it?"

That's how it all started, it was just let's see what we can do. There really wasn't any grand plan.

What were some of the your most productive applications?

I'd say it was the pricing and configuration tools, because one of the big problems we've had in ordering was cleanly configured orders and correctly priced orders. It took anywhere from a couple of hours to several days for the purchasing organization and our customer service team to go back and forth to get a cleanly configured order, and this was just for us to get it into our system.

Can you give us an example here?

If you think about ordering a PC for yourself, you have to order the box, and then you say how much RAM you want, how much disk space you want, what peripherals you want. To order a router you go through the same type of thing. You have different options, how much D-RAM do you want, how much flash, memory, what software are you going to run with it. So we built what we call the configuration agent, which walks you through ordering a router. When you pick certain options, it makes sure the other features you select are correct so that the order is cleanly configured and the router will work when you plug it in.

When someone logs on, I assume if they have any history with you, this agent remembers their past purchases?

We have something called saved configurations, which means if you order the same thing very often, you can save it with a name and then call it back up and it will load directly into our configurator. Then you just have to final check it to make sure it's still a valid order. Things change so quickly, and we may obsolete a certain software that you have today, so that you still need to revalidate each order.

What is the IPC?

We did all these tools as stand-alone items first. The next logical step was to put them all together into one big package--an order management tool. This is what we call the Internetworking Product Center, or IPC. It allows you to go in, order products off the Web, configure and price them, and send the order in over the Web.

Now we have follow-on tools, such as our contract status agent, so that once you've placed the order and purchased service contracts with us for

support of that particular router, you can get all your contract information online, and you can get invoice data online. You can also place service orders online and get service order status; anything you can do for a finished goods order you do for service as well.

As you kept automating what happened to the organization of Cisco's IS team?

What we began to call network commerce developed into its own IS team and its own business team, which grew out of the customer service organization. We're now in the customer advocacy division, really eventually supporting the whole of Cisco.

When you hired IS staff, what were you looking for in terms of expertise?

We were looking for Web developers in the beginning, so as an IS manager I was looking for people who had Web experience, period!

How did you construct the site?

Well, let me tell you, we did not use rocket science to build this stuff. We're a 100 percent Unix server shop right now. We're a 100 percent Oracle database shop. We run Oracle ERP on the back end, which is Oracle's manufacturing and financial package. It's HTML on the front end, Perl/CGI in the middle, and C on the back end. We developed it all in-house and did not buy any commercial packages except for the configuration engine, although we still had to build the interfaces to that.

We're actually in the process of looking at changing the technology that we run on, because of course the technology is moving very fast. We're looking at implementing a Java/CORBA-based solution and building a much more object-oriented implementation.

How are you making that decision?

My group is looking at it, and we work very closely with our group dedicated to just technologies, the Advanced Technology Group.

Will this happen in 1998?

Yes, we're pushing for next year. We've already started rebuilding.

How many staff do you have right now?

I have a team right now of about 25 people, who support all of our Web-based electronic commerce initiatives as well as our direct business-to-business (business server to business server) commerce. Here we're actually integrated into the systems of our largest partners, giving them our data-configuration data, product data, pricing data—and we allow them to modify their tools and work environment to use our data so they can validate orders before they send them to us.

Is this data going out over the Internet, or do you have a special network?

We use the Internet for communication, but in some cases we have it set up as a virtual private network with very direct communication.

Tell us more about how you tie in the Web input with your Oracle databases.

We've built something we call the Network Commerce Engine, which is really the middle piece that uses the Oracle ERP standard order format to add orders into Oracle. But it's all automated, so from the beginning when you enter an order on the Web site, it's then dropped into some temporary tables, and validated from the Web site.

The network commerce engine actually pulls through all that data from the temporary tables and validates it again. It has a rules-based engine that processes customer business rules adding additional order data as needed. Then the order is dropped directly into our Oracle ERP systems. If there are no problems with it, it's dropped in with a "booked" status, which means it's immediately available to manufacturing to be scheduled to be built. That can occur within 15 minutes of an order being placed. Before you would never see that kind of turn around!

What kind of interface into all of this does the manufacturing end of Cisco use?

That's all handled more traditionally in the Oracle ERP databases right now. If you think about it in this way: our electronic commerce system is just a front end into our back-end financial manufacturing system.

A Web order appears to manufacturing just as if the order had been entered directly through a screened format into an ERP directory. There really is no other direct interface into manufacturing from the Web for the order entry side of things. We do have some manufacturing initiatives going on with suppliers that are more traditional, EDI-based systems right now, although they're looking at Web initiatives too.

And the database is networked via local- or wide-area networks to your different manufacturing sites?

Yes, the Oracle database is all internal on a LAN and of course we have our own WAN around the world. There are several different manufacturing locations, one in San Jose, one here onsite in this campus, and we're going to be spreading out even more over the course of the next year.

This means we're going to be splitting the manufacturing database this year. Database order management is already split--we have two sites, one in Amsterdam site and one in the U.S.

What feedback have you gotten from customers about this increased efficiency of your ordering process?

We've had domestic companies tell us it's literally taken anywhere from

three to five days off their ordering cycle, and internationally, up to seven days. And that's for companies who are pretty good about figuring this stuff out. We've had less experienced customers tell us it has saved them weeks, because before they simply could not get orders clean, they were too big and too diverse.

Reducing the order cycle time means customers don't have to place orders so soon, because they can count on the order getting into the system within a day. They can save that float--the money can be working for them instead of us.

Are orders validated by product availability as well as correct configuration?

No, we don't do product availability right now. Cisco is 100 percent build to order, so we don't have pre-packaged inventory.

I know the network product center has a lot of nice functionality to it. Can you tell us something about this?

First, let me tell you about our workflow functionality. All users who have access to our commerce tools are of course registered with us, and users who actually submit orders online give us what we call a Network Commerce Agreement. This basically says that doing business online is as valid as a hard copy P.O. When they sign that agreement, they also tell us who in the company is authorized to submit orders to Cisco.

The workflow built into the system enables an engineer to start an order, since they're the technical people and know how to configure the order, and then route it over to the purchasing people in their company, who will then assign the P.O. number and do all of that kind of administrative work.

You can attach notes with each routing so everyone can see who's seen it, who's approved it, and who's routed it. You can also enter detailed order notes. The actual notes on the routing are only specific to the company and don't come into Cisco. They go into the database, but are not sent along with the order. But you can also attach order-level notes or line item-level notes that will be sent in to Cisco as part of the actual order.

Another great thing about the product is the way it's designed. You set up certain data only once, like your bill-to and ship-to and default information so that you don't have to enter all that information every time. The saved configurations I mentioned mean that if you've already ordered a product before, you can load that information right into the configurator.

Second, we have a checklist format, so that when you sign on it brings up a menu and walks you through the order, so that it's very easy to add an item. If you know a product number, you can key it right in for fast entry. If you don't know, there's a lot of search functionality there for you.

What was the biggest challenge in building all of this?

For me the challenge is that order entry can be extremely complex,

especially with very technical products like this. If you look at order entry through SAP or Oracle or some of the big packages, it gets very, very complex when you're going through screen after screen after screen. How then do you take that complex business functionality and put it on the Web in a way that a customer is able to use? More than that, to help a customer who wants to use to improve their own business process.

We want to put more and more functionality on the Web, but it's tough. It's tough to keep it simple, and that's really what you have to do. So that's one challenge.

Another challenge is really getting other companies to change their own business process in order to integrate use of the Web. Once they understand the value of the tool—faster orders that are cleanly configured and priced—it's not that difficult. But there's an initial hump to get over in the beginning, because they can see it as them doing work for us.

Well when it really comes down to it they're not. They're helping themselves. We've had customers come back to us after they've used our commerce tools for a while and tell us they've saved anywhere from \$20,000 to \$25,000 a month just in gained efficiency and less administrative costs.

Yes, let's talk numbers now. Tell us about what you've earned and saved through use of the Web.

We're currently processing close to 40% of all orders electronically, and we're looking to do 60% of all transactions electronically by the end of this year. We've done over a billion dollars worth of sales on the Web, and by the time we exit this quarter, we will have done well over \$500 million dollars in just one quarter alone.

I read quotes that you are making nearly \$5 million a day.

We're actually closer to \$10 million a day now.

What kind of figures do you have about internal efficiency? Have you been able to measure this?

Right now on the order entry side we know that for every 20 to 22 orders, that's a head count saved. That means we do not have to grow our human resources as fast as the business is growing. What we're trying to do as a result is invest in the retraining of the people we have to be really true value-add customer service people. Since we're not doing as much straight order entry, we are training them in much better customer service techniques, which is great for them and for the customer.

On the technical support side we saved about \$268 million dollars last fiscal year, since 55 to 60 percent of all support inquiries come in through our Web site and are answered online instead of over the phone.

We have something we call open forum, which is one of our most-used

tools for technical support. You can search by key words or you can post a question. A rendering engine will come back with ranked listing of answers. If you can't find a suitable answer you post the question online, and then our CCIEs or Cisco Certified Internetworking Experts (who reside not only inside of Cisco but at all our partners as well), will answer the question. The usual turnaround for answers online is a day or less.

Then software downloads saved us about \$75 million last year, because customers can go right on and get immediate access to downloaded upgrades to their software. This means that they have the most current version at any given time, and we don't have to package it, we don't have to replicate it, and we don't have to distribute it.

Another area of big savings, about \$85 million, is in becoming a paperless office. All of our product documentation, marketing documentation, and support documentation is right online.

What are your plans for the future?

The automation of our entire business cycle. It starts with somebody finding out about our product, a lead. Then you need to give them a quote on some products they like. Then an order will come in, and it needs to be cleanly configured and priced. Then it goes through the manufacturing loop, is invoiced, and then there is sales, service, and support back out to the customer. We've probably got about 50 or 60 percent of the cycle automated now.

The Web is not going to go away, it's going to be a way of doing business. We're trying to encourage companies to jump on the train and automate in this way.

How can people make that transition?

You have to look at what's the right thing to automate for you. For us it was configuration and pricing because we have complex ordering systems. For people in health care it may be automating prescriptions online, or the way in which people communicate with each other.

The brokerage business is really booming in the online area, because they see it as a way to really lower their transaction costs, especially with more and more people trading. So you have to look and decide for your industry or for your company, what's the right thing to do first. *



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